D H E C
PROMOTE PROTECT PROSPER
2600 Bull Street
Columbia, SC 29201-1708

MEMORANDUM

RE: Evaluation of Carolina Plating Works, Inc. facility's status under the RCRA Info Corrective Action Environmental Indicator Event Code CA750
EPA ID Number SCD 003 351 996

FROM: Kim D. Tappa, PG KDT
RCRA I Section
Hydrogeology Division
Bureau of Land and Waste Management

THRU: Jack Gelting, Manager
RCRA I Section
Hydrogeology Division
Bureau of Land and Waste Management

G. Ken Taylor, PG, Division Director
Hydrogeology Division
Bureau of Land and Waste Management GKT

TO: Carolina Plating Works, Inc. Project File
EPA ID # SCD 003 351 996
Central File Room # 050891

DATE: July 12, 2005

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Carolina Plating Works, Inc. facility's status in relation to the Migration of Contaminated Groundwater Under Control (CA750) corrective action event code defined in the Resource Conservation and Recovery Act Information System (RCRA Info).

An evaluation of Carolina Plating Works, Inc.'s status in relation to the current Human Exposures Under Control (CA725) corrective action event code has already been finalized under separate cover.

Concurrence by the RCRA I Section Manager and the Division of Hydrogeology Director is required prior to entering this event code into RCRA Info. Your concurrence with the interpretation provided in the following paragraphs and the subsequent recommendation is satisfied by dating and signing at the appropriate location within Attachment I.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the second evaluation for the Carolina Plating Works, Inc. facility with regard to the CA 750 corrective action event code. The previous evaluation was complete on September 19, 1996 (memorandum from Overcash to Gelting). Based on the information available at the time, a status code of "NO" was entered into RCRA Info.

III. FACILITY SUMMARY

Carolina Plating Works, Inc. is a metal plating facility that electroplates various steel assembled components for other industries. The Carolina Plating Works, Inc. facility is located at 1101 West Blue Ridge Drive, Greenville, SC. Past electroplating operations at the facility generated wastewater containing copper cyanide, cadmium cyanide, zinc chloride and tin. Rinse water contained cyanide and hexavalent chromium. The Postclosure Care Hazardous Waste Permit for one closed surface impoundment (SWMU No. 3) was renewed, effective August 16, 2001.

There are nine SWMUs at Carolina Plating Works, Inc. for which a RCRA Facility Investigation (RFI) has been completed. The Final RFI Report document is dated August 15, 2001 and was conditionally approved on July 17, 2002. SWMUs 2, 6, 7, 8 and 9 were identified as having been impacted by past practices at the facility. A revised Corrective Measures Study for these SWMUs, dated August 30, 2004, has been conditionally approved. A Statement of Basis, revised July 5, 2005, has been approved. A permit modification to incorporate the final remedy for each SWMU is presently being prepared.

IV. CONCLUSION FOR CA750

Name and ID No.	Location (City or Town)	Date of Latest EI Memo	CA 750 Decision
Carolina Plating Works, Inc. SCD 003 351 996	Greenville, SC	July 12, 2005	"YE"

SUMMARY OF FOLLOW-UP ACTIONS

The *Migration of Contaminated Groundwater Under Control* EI determination will be updated as necessary upon the discovery of new or contrary information.

Attachment I. CA750: Migration of Contaminated Groundwater Under Control

cc: Keehna Frasier, Operations Engineering Section
Harry Mathis, EQC Region 3
Jon Johnston, EPA Region 4

Environmental Indicator (EI) RCRIS Event Code (CA750)
ATTACHMENT 1
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: Carolina Plating Works, Inc.
Facility Address: 1101 West Blue Ridge Drive, Greenville, SC 29609
Facility EPA ID #: SCD 003 351 996

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   X If yes - check here and continue with #2 below,

   ____ If no - re-evaluate existing data, or

   ____ If data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be "**contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

__X__ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

____ If unknown - skip to #8 and enter "IN" status code.

Rationale:

Concentrations of cadmium and chromium exceed maximum contaminant levels as established in the US EPA Drinking Water Regulations and Health Advisories (Winter 2004). The highest concentrations are in the vicinity of monitoring wells ETE-4 (Cd = 1.1ppm) and ETE-8 (Cd = 1.4ppm, Cr = 24ppm).

Reference:

2004 Annual Groundwater Assessment And Corrective Action Report (dated March 15, 2005)

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** such that contaminated groundwater is expected to remain within an "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination?

__X__ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale:

In 1991, recovery well RW-1 was placed into operation in the vicinity of monitoring well ETE-3. A second recovery well, RW-2, was installed in 1994 in the vicinity of ETE-6 and placed into operation in 1995. In June of 2002, RW-3 was installed in order to enhance the existing recovery system and to specifically address the area near monitoring well ETE-8. At this time, RW-1 was removed from operation. Since the third quarter of 1991, when the first recovery well was activated, data collected from the plume wells and the point-of-compliance wells indicate a decreasing trend in contaminant concentrations. Recently collected data show that levels of trichloroethylene, a constituent of concern, are no longer detectable in monitoring wells (previously, levels were up to 12ppb in ETE-9, 63ppb in ETE-8, 11ppb in ETE-6A, 21ppb in ETE-6B, 88ppm in ETE-6, 37ppb in ETE-5, 10ppb in ETE-4A, 10ppb in ETE-4, 227ppb in ETE-3A and 32ppb in ETE-3). The recovery system, which is designed to capture the impacted ground water and direct it to the facility's onsite wastewater treatment plant, will continue to prevent off-site migration. Presently, the facility's permit is being modified to incorporate this recovery system as a final remedy.

During an offsite investigation, 9 temporary monitoring wells were installed offsite, downgradient of the facility. The results were all either below detection limits or below background values for the analyzed constituents.

References:

2004 Annual Groundwater Assessment And Corrective Action Report (dated March 15, 2005)
2003 Annual Groundwater Assessment and Corrective Action Report (dated March 15, 2004)
Statement of Basis (revision dated July 5, 2005)
Final RCRA Facility Investigation (dated August 15, 2001)

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

____ If yes - continue after identifying potentially affected surface water bodies.

__X__ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale:

The nearest surface water body to the facility is Langston Creek, which is located approximately 600 feet to the southwest of the facility. During the RFI process, four (4) surface water and sediment samples were collected from this creek, as well as eight (8) samples collected using passive groundwater discharge sampling devices. The results were all either below detection limits or below background values for the analyzed constituents.

References:

Final RCRA Facility Investigation (dated August 15, 2001)
Offsite Investigation (dated August 23, 2000)

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant"** (i.e., the maximum concentration[7] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature and number of discharging contaminants, or environmental setting) which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) providing a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," providing the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identifying if there is evidence that the amount of discharging contaminants is increasing.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable"** (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment Alevels,≅ as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable"**) - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

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[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

   X If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

   ____ If no - enter "NO" status code in #8.

   ____ If unknown - enter "IN" status code in #8.

Rationale:

The facility's postclosure care permit requires annual sampling for all groundwater protection constituents at all monitoring wells (ETE-1, ETE-1A, ETE-3, ETE-3A, ETE-4, ETE-4A, ETE-5, ETE-5A, ETE-6, ETE-6A, ETE-6B, ETE-7, ETE-8, ETE-9, ETE-10, MWC-1M, MWC-1D, MWC-4S, MWC-4D, MWC-6S, MWC-6D, MWCR-7, RW-1, RW-2 and RW-3), and additional semi-annual sampling for barium, cadmium, chromium, chloroform, methyl chloride and trichloroethene at monitoring wells ETE-3, ETE-3A, ETE-4, ETE-4A, ETE-7, ETE-10, MWC-4S, RW-1, RW-2 and RW-3.

Reference:
Postclosure Care Hazardous Waste Permit SCD 003 351 996, effective date August 16, 2001

RCRA Corrective Action Interim Final 2/5/99

Environmental Indicator (EI) RCRIS Event Code (CA750)

Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__✓__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Carolina Plating Works, Inc. facility, EPA ID # SCD 003 351 996, located at 1101 West Blue Ridge Drive, Greenville, South Carolina. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater." This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

____ IN - More information is needed to make a determination.

Completed by Kim D. Tappa Date: 7/12/05

Kim D. Tappa, PG
RCRA I Hydrogeology Section
Bureau of Land and Waste Management

Supervisor [signature] Date: 7/15/05

John R. Gelting, Manager
RCRA I Hydrogeology Section
Bureau of Land and Waste Management

Locations where References may be found:

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